

**APPENDIX C**

**RESPONSIVENESS SUMMARY**

## **MIDVALE SLAG SUPERFUND SITE OU2 RESPONSIVENESS SUMMARY**

The following responsiveness summary presents comments that were received during the public comment period and shortly after the public comment period from May 20 through June 19 and which was extended through July 19, 2002. Comments received by EPA have been restated in italic print. EPA's response to these comments are presented in standard print. Comments were received from the following individuals or organizations during the public comment period:

Littleton	7/19/02
Midvale Community Council	6/13/02
Midvale City	6/12/02
TAG	6/19/02
Kennecott	7/19/02
UTA	6/26/02
UPRR	6/20/02
JVWCD (ext. request)	6/14/02
JVWCD	7/19/02
Ball Feed and Horse Supply	7/15/02
Murray City	8/09/02
Murray City	9/06/02

## **Comments provided by Kevin R. Murray, Leboeuf, Lamb, Greene & MacRae, L.L.P., dated July 19, 2002**

*Our client, Littleton, Inc. ("Littleton") is pleased to comply with your request by submitting these comments to EPA's Proposed Plan for the Midvale Slag Superfund Site Operable Unit 2, Midvale, Utah ("Proposed Plan").*

### **GENERAL COMMENTS**

#### **1. The Stakeholder Process**

*Littleton believes that the proposed plan and the process of delivering the plan has been progressive, forward-looking, and a positive collaborative process properly involving all federal, state, municipal, and private stakeholders. This collaborative process has resulted in apparent resolution of a number of complex and challenging technical, development, land-use, legal, and related issues, and the results appear very positive.*

#### **Response:**

EPA is pleased that Littleton feels the process used for this Superfund site has been progressive and forward-looking. EPA has tried to make this proposed plan a collaborative, consensus-based document that was created with all stakeholders involved in order to achieve the highest possible remediation goals while enhancing and enabling redevelopment at the site after the remediation is completed. EPA appreciates the cooperation of all parties—federal, state, municipal, and private stakeholders - as this has allowed numerous technical and developmental issues to be addressed successfully.

#### **2. The Redevelopment Alternative**

*Littleton supports the Redevelopment Alternative. We are confident that the Redevelopment Alternative is feasible and will result in the protection of human health and the environment, while at the same time maximizing the redevelopment potential for the site. The key factors in the redevelopment alternative are (1) EPA's conclusion that a low-permeability cap will not be required, and (2) the concept of beneficially reusing large amounts of slag, especially the reuse of slag throughout OU2 as structural fill. Not only will the slag provide a more benign material in which to build, but it will serve as a visual indicator to facilitate enforcement of institutional controls in the future. Littleton would oppose any changes in the plan that would trigger the need for a low-permeability cap or the requirement for double handling of material.*

#### **Response:**

EPA concurs with the above statements. A low permeability cap is not necessary for the Site given the current ground water condition and future water management plans for the site. Beneficial use of slag on the site will support the preferred alternative and aid in the overall site redevelopment.

*While Littleson agrees with the concept that Category I materials should be managed off-site, Littleson questions the feasibility, from an engineering standpoint, of excavating Category I materials in the area of the Union Pacific Railroad trestle and track. Littleson anticipates that engineering requirements imposed by the railroad will place constraints on the feasibility of complete removal of Category I material in that area. Further, Littleson questions the need to remove this material; because it will be isolated under an active railroad track and trestle, the potential for completed exposure pathways is very limited.*

Response:

Since the proposed plan was finalized, EPA has received additional information regarding the location of baghouse dust, a Category I material at the Site. This information was summarized in a technical memorandum dated September 2002 and is in the Administrative Record for this Site.<sup>1</sup>

The additional information indicates that more than one pond existed in the smelter area, with the largest pond being located adjacent to and under the current Union Pacific Railroad right-of-way. Based on results from a field trenching investigation conducted on September 10, 2002, there appears to be less Category I material in this area than previously believed. Direct contact risk associated with residual materials will be mitigated by covering the area with slag, an appropriate cover, and implementing appropriate institutional controls (including surface water management controls). Conceptual plans prepared by developers indicate this area will be covered with approximately 20 feet of slag to raise it to the elevation of the existing railroad grade. EPA's evaluation of ground water modeling demonstrates that leaving residual baghouse dust material on site will not affect compliance with alternate concentration limits for ground water.

**3. Jordan Valley Water Conservancy District**

*In response to the letter dated June 14, 2002 submitted by Robert P. Hill on behalf of the Jordan Valley Water Conservancy District (the "District"), Littleson has the following comments:*

*In its letter, the District objects to the preferred alternative (GW-2) presented in the Final Focused Feasibility Study for Ground water in Operable Unit 2 on the basis that future ground water wells the District plans to develop on the west side of the Jordan River may draw contaminated water from Site (on the east side of the Jordan River) "into the Jordan River at an increased rate and beyond the river into the currently uncontaminated areas which are being developed for municipal use, causing contamination of the new municipal wells."*

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<sup>1</sup> Other information located in the site repository regarding baghouse dust issues are as follows: UDEQ comments on baghouse dust pond technical memorandum, UDEQ trenching activity summary, UPRR correspondence, ENTACT field sampling plan and health and safety plan, ENTACT summary report of trenching activities, trip report by CDM on trenching activities, baghouse dust pond technical memorandum, and a final baghouse dust pond chronology memorandum.

Response:

Littleton offers a number of responses to comments offered by the Jordan Valley Water Conservancy District in a letter to EPA dated June 14, 2002. The district later expanded on these comments in a letter to EPA dated July 18, 2002. Because the content of the two letters was similar (the July 18 letter providing more details), EPA responded to the district's comments in the context of its July 18 letter.

Littleton and EPA commented on many of the same points made by the district in its two letters. Included below are references to EPA's responses to the district's comments.

*The District obviously misapprehends the state of the facts and the law pertaining to this matter. In the first place, EPA, the State, the City of Midvale, Littleton, and others have been engaged in investigating and characterizing the type and extent of contamination to the shallow ground water aquifer underlying the Site for more than a decade. This investigation has concluded that even under the most aggressive remedial scenarios (involving the physical removal and off-site disposal of the entire perched unit, combined with an aggressive pump and treat program), there is already so much arsenic sorbed to the matrix of the upper sand and gravel aquifer that it would take from 90 to 300 years (or more) to achieve restoration of the upper sand and gravel aquifer. Irrespective of feasibility and cost, there is nothing EPA can do to restore the upper sand and gravel aquifer within any time frame that would be of value to the District.*

Response:

See EPA response 1 (e) of the JWWCD response to comments, July 18, 2002, later in this document.

*Second, the District is bound by existing state and federal law to deliver safe drinking water to the public. See Safe Drinking Water Act (42 U.S.C. § 300f et seq.); Utah Safe Drinking Water Act (Utah Code Ann. §19-4-101 et seq.). Therefore, if the District chooses to locate wells in places where it is likely to draw arsenic into the public drinking water supply, the District alone will have the legal responsibility to treat the water and comply with the pre-existing legal requirements regarding delivery of safe water to the public.*

Response:

See EPA response 1 (c) of the JWWCD response to comments, July 18, 2002, later in this document.

*Third, the District does not seem to understand the legal implications of its proposed actions. While the District may have the legal right (as a matter of state water law) to change the point of diversion of its existing Jordan River surface water rights to ground water locations along the Jordan River, the District alone is the entity selecting the location of these wells. If the District chooses to place its new wells near an area of well-known contamination that is part of a Superfund Site, and draw contaminated water "into the Jordan River at an increased rate and beyond the river into the currently*

*uncontaminated areas which are being developed for municipal use," then it is the District alone that would be directly responsible and completely liable for changing the status quo and exacerbating the nature and extent of contamination in the area. Liability under the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") clearly extends to not only owners, but "operators." If the District's operations, albeit across the Jordan River, cause the conditions in the upper sand and gravel aquifer to change as the District anticipates, then the District would clearly become an operator under CERCLA, strictly and jointly and severally liable for causing the release or threat of a release of a hazardous substance. See, e.g., Tanglewood East Homeowners v. Charles-Thomas, Inc., 849 F.2d 1568 (5th Cir. 1988); Kaiser Aluminum & Chemical Corporation, 976 F.2d 1338 (9th Cir. 1992); Redwing Carriers, Inc. v. Saraland Apartments, 94 F.3d 1489, 1512 (11th Cir. 1996). EPA guidance also adopts and approves of this concept specifically with respect to ground water contamination. See Policy Toward Owners of Property Containing Contaminated Aquifers (May 24, 1995) (stating that EPA's general policy against taking enforcement action against the owners of property where hazardous substances have come to be located on or in a property solely as the result of subsurface migration in an aquifer from a source or sources outside the property "may not apply where the property contains a ground water well, the existence or operation of which may affect the migration of contamination in the affected aquifer.").*

Response:

See EPA response 1(d) of the JVWCD response to comments, July 18, 2002, later in this document.

*It must be understood that the District has not historically used the water in the upper sand and gravel aquifer around the Site. Rather, the District is seeking to change the point of diversion of existing surface water rights in the Jordan River to a ground water point. Littleton understands from the District's representations that because of the hydrogeologic connection between the upper sand and gravel aquifer and the Jordan River, essentially for every acre foot of water drawn from the upper sand and gravel aquifer along the Jordan River, there will be a loss of an acre foot of water to the surface water flow. The District is changing the point of diversion in an attempt to improve the overall water quality (palatability and drinkability), essentially using the upper sand and gravel aquifer itself as a filter. But when a point of diversion is changed, as a matter of state water law, the water right holder cannot complain about water quality. If the District were to change the point of diversion of a certain water right from the Jordanelle Reservoir to the bottom reaches of the Jordan River, it could hardly complain about differences in water quality.*

*The policy underlying these legal principles makes good sense. Otherwise, unscrupulous individuals would have every incentive to acquire water rights, change the point of diversion to a location near a contaminated aquifer, and then argue that the property owner has contaminated good water. While this may make for a good business plan, a party who voluntarily comes to a known condition, and who intentionally exacerbates the condition cannot reap a windfall from the existing condition. CERCLA*

*prevents a windfall from accruing under these circumstances by imposing liability on operators whose operations cause the release or threat of a release of a hazardous substance.*

*The Jordan River extends for many, many miles in the Salt Lake Valley, providing hundreds of suitable locations for wells that will not affect the arsenic plume beneath the Site. If the District elects to place wells in locations where it has reason to know that it will disrupt the status quo of the arsenic plume, cause the plume to change, accelerate, or spread, then the District alone should bear the costs of its voluntary and deliberate actions. Nothing is compelling the District to locate wells near the Site.*

**Response:**

Comments noted.

*Based on the foregoing, it is clear that far from requiring a restoration under these principles, it may be that the District will not be able to locate ground water wells along the east bank of the Jordan River as it currently plans without exacerbating existing ground water contamination at or near the Site. Although this is unfortunate, this is essentially the same position faced by Littleton and countless other property owners which own properties which have been contaminated by the actions of others. As a result, Littleton continues to support the selection of GW-2 as the most appropriate remedial action alternative for ground water.*

#### **4. Lead Refinery Building**

*Remediation of the Lead Refinery Building through decontamination or demolition is necessary given EPA's conclusion that the building is contaminated with "significant levels of metals, especially arsenic." Two wipe samples were collected on the interior building walls as part of the 1994 EE/CA. The results are summarized below:*

<b>Metal</b>	<b>Result (ug)</b>	<b>Area Concentration ug/cm<sup>2</sup></b>	<b>Result (ug)</b>	<b>Area Concentration ug/cm<sup>2</sup></b>
<i>Arsenic</i>	<i>6,562</i>	<i>65.62</i>	<i>11,691</i>	<i>116.91</i>
<i>Cadmium</i>	<i>23.35</i>	<i>0.2335</i>	<i>29.12</i>	<i>0.2912</i>
<i>Lead</i>	<i>2,683</i>	<i>26.83</i>	<i>1,180</i>	<i>11.8</i>
<i>Copper</i>	<i>1,800</i>	<i>18</i>	<i>140</i>	<i>1.4</i>
<i>Zinc</i>	<i>11,784</i>	<i>117.84</i>	<i>3,582</i>	<i>35.28</i>

*Based on the sampling, EPA determined that the interior walls of the building are contaminated with "significant levels of metals, especially arsenic." Further, the building security has been compromised on numerous occasions by trespassers. The potentially complete exposure pathway, coupled with the presence of notable contamination raises the possibility of an unacceptable human health risk posed by the contamination.*

*Entact's past experiences related to similar metal buildings have proven that the highest concentrations of lead/arsenic-containing dust are not in the open, exposed surface area where the wipe samples were collected. The highest lead/arsenic dust concentrations are typically found in the cracks and crevices, between metal overlap and contact surface points, between joists, girders, and trusses where steel structures meet the metal (tin) outer roof and side coverings. These metal buildings cannot be decontaminated and dismantled in conventional fashion because of the risk of exposure, via air pathway, to on-site workers and the surrounding population. The lead/arsenic concentrations found in the areas discussed in other similar buildings have been found to be ten times the concentrations of wipe samples taken on exposed surfaces of similar buildings. In most cases, the only way to get to this material is through the breaking of a weld or the removal of a rivet or bolt, which is all part of the demolition. For example, the Occupational Health and Safety Act (OHSA) requires, at a minimum, a Protection Level B (which includes supplied air) to be used when dismantling or cutting baghouses inside these primary or secondary smelter buildings or until air-monitoring results indicate that risk of exposure to the on-site worker is not present.*

*Based on the foregoing, Littleton would request that demolition of the lead refinery building be provided for in the Record of Decision.*

Response:

EPA has re-evaluated whether demolition of the lead refinery building should be included in the ROD. As part of this evaluation, EPA reviewed historical photos of the Site. These photos indicate that smelting processes occurred in the lead refinery area and that wastes from these processes are likely to be found around the lead refinery building. The lead refinery building has a dirt floor, which suggests that process wastes may have contaminated soils directly beneath the building. Because there is suspected contamination in soils beneath and in the immediate vicinity of the building, EPA has determined that the building should be removed in order to install an appropriate remedial cover.

**5. Number and Placement of POC Monitoring Wells**

*In Littleton's comments on the Draft Ground Water FFS, Littleton expressed concern over the lack of proposed points of compliance (POCs). Littleton incorporates its prior comments and will not reiterate them here.*

*The Final FFS defers the selection of POC's to the design phase of the project. While deferring final locations of the points of compliance to the design phase is appropriate, Littleton requests that the conceptual design of the POCs be addressed on the Record of Decision.*

*Littleton believes that POCs within the Jordan River is the most direct method for assessing the impacts of contaminated ground water discharging to the River, based on actual conditions. Background-subtracted water quality measurements should be substituted for ground water quality monitoring at the east bank of the River.*



*If EPA selects the indirect method of monitoring water quality in the Jordan River, Littleton proposes three equi-spaced monitoring wells be established as POCs for each chemical with an ACL. For arsenic and PCE, one well would be located in the core of the current plume at the Jordan River with two flanking wells set near the north and south plume boundaries (approximately 1/3 of the distance between the plume boundary and the center well).*

*In the case of cadmium, the current plume at the Jordan River is limited to a single historical sample (CP-107, Figure 1-22). Therefore, the center POC well for this chemical should be sited by projecting along the hydraulic gradient from MW-18 (the location of the maximum value detected to date) to the Jordan River. CP-108 (Figure 1-22) approximates the location of the center POC well to monitor the future core of the cadmium plume, should it impact Jordan River.*

Response:

A preliminary monitoring plan has been prepared to address the establishment of points of assessment for various phases of the monitoring program. These points of assessment are as follows:

- One ground water well nest will be established in the center of the arsenic plume along the river.
- Four additional well nests will be established within the arsenic plume along the river.
- Two well nests will be established in suspected locations of maximum arsenic concentration.
- Two well nests will be established along the river immediately outside the arsenic plume boundary.
- Two well nests will be established outside of the midpoints of the north and south arsenic plume boundaries.
- One well nest will be established in an upgradient background location.

Each of these well nests will include two wells, one in the shallow and one in the deep reaches of the US&G Aquifer. A sampling station will also be established in the Jordan River downstream of the Site. The program will monitor all of these locations. A complete program for monitoring, trend assessment, excursions, and contingency planning will be developed during remedial design.

## 6. Calculation of ACLs

*In Littleson's comments on the Draft Ground water FFS, Littleson expressed concern over the ACLs proposed for arsenic and cadmium. The ACLs appear to be overly-conservative and present a risk of an exceedence at a level that in reality should present no reasonable threat to human health or the environment. They were also unnecessarily conservative given the arsenic ACL was based on a goal of not exceeding the background concentration in the Jordan River by more than 10 percent under extreme low flow conditions. No scientific, risk-based rationale was provided for this formula. In the case of cadmium, EPA estimated the background concentration of cadmium in the Jordan River to be 1.0 ug/l. This is an extremely conservative assumption given EPA's own data does not agree with this estimate.*

*Littleson proposes the following ACLs for arsenic and cadmium:*

*Arsenic* - *The calculated maximum average concentration in ground water at the POC is 5,845 ug/l (Page B-8). Littleson proposes an ACL of 2,500 ug/l for the following reasons:*

- *The use of 2,500 ug/l provides adequate protection by maintaining the ambient water quality well below the criterion and allows for additional down-stream (off-Site) loading by other future dischargers.*
- *A maximum concentration at the Jordan River of 5 mg/l is predicted to occur in year 130 (Page 1-71, 3rd bullet). The use of 2,500ug/l would significantly reduce the chance of an ACL exceedence at a level that would not appear to present any risks to human health or the environment above a level of concern.*
- *An exceedence of the proposed 1,000 ug/l ACL is possible given the anticipated 5,000 ug/l peak concentration at the Jordan predicted by EPA's model. However, an exceedence of the overly-conservative proposed ACL (1,000 ug/l) will not result in environmental risks above a level of concern or an exceedence of water quality table values. Therefore, the ACL should be set higher in order to be meaningful.*

*Cadmium* - *The proposed ACL for this contaminant is 31 ug/l (page B-12). This value is based on an assumed background concentration in the Jordan River of 1.0 ug/l and a water quality standard of 1.1 ug/l. The resulting ACL is the maximum allowable without exceeding the water quality standard.*

*A review of the available data shows the actual background cadmium concentration in the Jordan River to be well below 1.0 ug/l. Appendix E of the Draft Site Characterization Report (October 2001) lists all Jordan River surface water samples as containing arsenic at levels well below 1.0 ug/l (no relevant data was provided in the Final Site Characterization Report, May 2002). Littleson recalculated the maximum allowable average discharge concentration for cadmium:*

*Jordan River:*

$$Q_{sw} = 21.72 \text{ cfs}$$

$$C_{sw} = 0.34 \text{ ug/L}$$

$$C_{wqc} = 1.1 \text{ ug/L}$$

*Ground water:*

$$Q_{gw} = 0.072 \text{ cfs}$$

$$C_{gw} = 230 \text{ ug/L}$$

Using  $C_{gw} = (((Q_{sw} + Q_{gw}) \times C_{wqc}) - (C_{sw} \times Q_{sw})) / Q_{gw}$  from the Ground water FFS, the calculated maximum allowable average discharge concentration for dissolved cadmium in ground water is 230 ug/L. Per EPA's Risk Assessment Guidance (1988), one-half of the detection limit (0.4 ug/L) was used in calculation of the average concentration of cadmium in the Jordan as shown below:

<b>Cd (ug/L)</b>	<b>Qualifier</b>	<b>Value</b>
0.48	B	0.48
0.4	U UJ	0.2
0.4	U UJ	0.2
0.4	U UJ	0.2
0.66	B J	0.66
0.4	U J	0.2
0.4	U UJ	0.2
0.58	B J	0.58

Average: **0.34**

Littleton proposes that an ACL of 230ug/l be set for cadmium. This is particularly important for cadmium given concentrations as high as 511ug/l have been reported in US&G ground water suggesting the possibility of an exceedence of the currently proposed ACL of 31 ug/l.

In addition to the issues raised above for each of the proposed ACLs, the calculation of EPA's default chronic design low flow may be incorrect. This value is important, as the maximum allowable contaminant concentration in ground water is directly proportional to the chronic design low flow.

Littleton questions the nature and accuracy of this variable, and believes that it is overly conservative. The FFS sets this value at 21.72 cubic feet per second (cfs). Littleton examined USGS Daily Stream Flow Statistics for the gauging station at 9000 south. These data indicate that with 95% confidence, the average daily stream flow at this station will not drop below 30.9 cfs on a single day in any given year.

*The EPA's default chronic design low flow is the value below which the 4-day mean flow will not drop more than once every three years. Because the USGS flow statistics report the minimum average daily flow for any given year with 95% confidence, it is a more conservative value than EPA's default chronic low flow (assuming the same confidence interval is used). Therefore, Littleton is concerned that the flow rate used in the ACL calculation may be lower than appropriate.*

Response:

In summary, EPA revisited its ACL calculations based on these comments. The results of this re-evaluation can be found in a technical memorandum dated October 2002 which is available in the Administrative Record for the Site. The calculations of ACLs have been revised, and the preliminary numbers presented in the ground water FFS have been finalized. The final ACLs are arsenic at 7,000 ppb; cadmium at 1,560 ppb; selenium at 900 ppb; and antimony at 380 ppb.

The revisions made include the following:

- Background concentrations of COCs in the Jordan River were examined in more detail. The maximum observed COC concentrations used in previous calculations were replaced with average values calculated from available data.
- The statistically significant increase<sup>1</sup> was examined in more detail. A value of 10 percent was used in preliminary calculations to represent the inherent variability in the sampling and analysis data. In revised calculations, one standard deviation calculated from available data is used. Both the preliminary and final calculations utilize the mean daily flow rate in making this assessment (not extreme low-flow conditions).
- Discrete values for monitoring wells will be calculated after the final locations for the monitoring wells are established. These discrete values replace the average values presented in the preliminary calculations.

**7. Previous Comments**

*For purposes of preserving the administrative record, Littleton incorporates by this reference its previous comments relating to the various earlier drafts of the feasibility study reports (for slag, mixed smelter wastes, and ground water), as well as related correspondence, memoranda, and other materials, including but not limited to:*

*December 7, 2000: Memo addressed to Ken Napp regarding ARARs (submitted to EPA for consideration and inclusion in the administrative record)*

- *December 15, 2000: Comments on First Draft Slag FS Report*
- *December 22, 2000: Comments on First Draft Ground water FS Report*
- *December 28, 2000: Comments on First Draft Mixed Smelter Waste FS Report*
- *January 19, 2001: Letter to Fran Costanzi regarding ARARs for mixed smelter*

*waste materials*

- *November 2, 2001: Comments on Draft Site Characterization Report*
- *February 8, 2001: Letter to Fran Costanzi relating to historic site issues.*
- *December 18, 2001: Comments on Second Draft Slag FS Report*
- *January 28, 2002: Comments on Second Draft Mixed Smelter Waste FS Report*
- *April 5, 2002: Comments on Second Draft Ground water FS Report*
- *April 16, 2002: Comments regarding risk and ARAR issues*

*Littleton appreciates this opportunity to provide comments. Please feel free to contact me if you have any questions or comments.*

Response:

EPA appreciates the comments provided by Littleton as this Superfund action is a collaborative effort between all the stakeholders. EPA's response to Littleton's comments for many of the above mentioned documents can be found in the Administrative Record in previous response to comment documents.

## **Comments provided by Midvale Community Council, David Colby, Chair, on June 13, 2002**

*After careful consideration and study, the Midvale Community Council supports the proposed plan for the Midvale Slag Superfund Site, Operable Unit 2, as per Draft of May 13, 2002.*

*The Council is convinced that this project will enhance the economic stability and continued growth of the Midvale Community, adding valuable commercial and residential land to the tax base.*

*The Midvale Community Council therefore respectfully requests that EPA issue a Record of Decision in a timely manner.*

### Response:

EPA sincerely appreciates the support of the Midvale Community Council. EPA recognizes the importance of this Superfund action and its effect on economic stability and growth for the Midvale community. EPA and the stakeholder group have worked diligently to issue a ROD and proceed with the cleanup and development of this Site for the community.

## **Comments provided by Midvale City, JoAnn B. Seghini, Mayor, on August 2, 2002**

*Midvale City has appreciated the opportunity to participate in the development of the proposed plan for the Midvale Slag Superfund Site Operable Unit 2. Consideration of our plans and zoning for uses on the site along with close coordination with the property owner has resulted in a plan which will meet the needs of all interested parties in the long run.*

*Midvale City had two goals in working with EPA on the proposed plan: ensure that the plan implemented at the site would be protective of the health of future users of the site and that the plan did not unnecessarily inhibit or increase the costs of construction and development at the site. The plan as proposed meets Midvale City's goals.*

*The City understands that the plan involves limited action on the ground water which includes ongoing monitoring of the plume and the levels of contaminants discharged into the Jordan River. Midvale is supportive of this alternative believing that it strikes the appropriate balance between the impacts of contaminated ground water on human health and the environment and a cost effective method to move the site forward to reuse. Midvale is also supportive of the methodologies proposed for dealing with Categories I, II, III and IV wastes including the disposal of Category I waste offsite and onsite disposal and grading of Categories II, III, and IV.*

*We recognize that implementation of this plan will include ongoing participation of the City of Midvale to ensure that future development does not jeopardize the remediation. As we move through the implementation phase of the Superfund process we look forward to working with you to ensure that the necessary processes are in place to encourage development and protect the remedy.*

*Thank you once again for the work you have done to balance the competing needs of the Stakeholders on this site. The City of Midvale strongly supports the proposed plan.*

### Response:

EPA appreciates the positive comments from the mayor of Midvale. EPA has appreciated working with the city in achieving the goals of this Superfund action. This project has become a model for how a Superfund action can be developed with the goals of the affected community in mind. EPA and the stakeholder group, of which the City of Midvale played an integral role, were able to develop a remedy that meets the goals of being protective of human health and the environment for future users of the Site while not inhibiting or increasing the costs of construction and development at the Site. EPA thanks the City of Midvale for participating in this important Superfund action. EPA also looks forward to working with the City of Midvale in the design and development phase of this project.

## **Comments provided by Tom Hopkins, Technical Advisor, Citizens for a Safe Future for Midvale, on June 19, 2002**

*The following comments are being provided to you for inclusion into the public comment record regarding the Proposed Plan for the Preferred Alternative(s) for cleaning up the contamination located on OU-2, Midvale Slag Superfund site, Midvale, Utah.*

*After reviewing the Proposed Plan the Citizens for a Safe Future for Midvale (CFSM) would encourage EPA to include both alternatives presented in the Record of Decision (ROD). We are aware of the limitations placed on EPA and their limits of responsibility in cleaning up contaminated sites and therefore, by including the Redevelopment Alternative developed by the current owner along with EPA's preferred alternative we believe the Site will achieve successful remediation and allow for redevelopment of the area. The CFSM appreciates the careful consideration and lengthy thought that went into this process and also thanks the current owner for working with EPA and the various groups to arrive at a cleanup alternative that allows for development of the site in the future and offers the necessary protection to human health and the environment.*

*After reviewing the proposed plans we have two main concerns that are as follows:*

- 1. It is our understanding that the preferred alternative under both plans is to do no active remediation of the contaminated upper sand & gravel aquifer (US&G) but to impose alternative cleanup level (ACL) and do long-term monitoring. We realize that the cost to restore the aquifer is very expensive and may take centuries to achieve. Our concern deals with the proposal being presented by the Jordan Valley Water Conservancy district to install a series of wells along the Jordan River to process water from the shallow aquifer and that through their action water from the US&G aquifer will not contaminate the Deep Principal aquifer. At this time the Deep Principal Aquifer does not seem to be impacted, but provisions need to be included in the ROD to assure that contamination does not take place and allow for the implementation of a remedial alternative should contamination occur.*
- 2. The CFSM would like to make certain that provisions are included in the ROD to assure that the funding for the remedial effort remains in place. Our concern is that political and other factors may defer funds away from the project before the process is complete. Should this be a possibility then provisions need to be implemented so that once the remediation is started the process from the removal action to covering to long-term monitoring is completed and continues as required.*
- 3. Institutional Controls are a part of either proposed alternative and these controls will be developed and implemented from a local or federal level depending on which entity has jurisdiction. The CFSM wishes to make certain that any Prospective Purchaser Agreements (PPA) become a part of all title documents and does not encumber the new landowner or developer.*



*In closing the Citizens for a Safe Future for Midvale supports the EPA preferred alternative and supports the inclusion of the Redevelopment Alternative developed by the current owner.*

Response:

1. Spread of contamination to the Deep Principal Aquifer is extremely unlikely under the proposed plan's preferred alternative for ground water. Ground water flows up ward since ground water levels are presently higher in the Deep Principal Aquifer than in the US&G Aquifer. Migration of arsenic contamination from the US&G Aquifer to the Deep Principal Aquifer would require a reversal in the flow direction between the two aquifers. A reversal in this flow direction could only be created if ground water levels drop in the Deep Principal Aquifer in response to increasing withdrawals. Additional drawdown in the Deep Principal Aquifer is highly unlikely since the aquifer is legally closed to additional ground water appropriation in the Salt Lake Valley.

Transfer of water rights into the Sharon Steel/Midvale Slag restricted area is not allowed under the Salt Lake Ground Water Management Plan. The management plan also notes that there is currently an over appropriation of water resources of the valley. In order to prevent excessive withdrawals that might cause definite and significant harm to the ground water system in certain areas, the plan indicates that the State engineer may limit withdrawals associated with existing appropriations. These limitations on existing appropriations could also be another form of future institutional controls.

Withdrawing ground water from the US&G Aquifer, as proposed in the plan by the Jordan Valley Water Conservancy District, could potentially lower ground water levels in the US&G Aquifer. If this did occur, and ground water levels did not change in the Deep Principal Aquifer, ground water would continue to flow upward, inhibiting the downward migration of contamination.

2. Funding for this Superfund action will come from a special account established some years ago as part of the bankruptcy settlement for the Sharon Steel/Midvale sites. Funds will not be diverted from this Site. The City of Midvale has expressed the intention to oversee some operation and maintenance activities. Final responsibilities for operation and maintenance will be determined during remedial design.
3. Protection for any prospective purchaser will be included in the consent decree. Appropriate notice will also be included in the chains of title for the property.

**Comments provided by Marcelle Schoop, Manager,  
Environmental & Sustainable Policies & Systems, Kennecott  
Utah Copper Corporation, on July 19, 2002**

*These comments submitted on behalf of Kennecott Utah Copper Corporation (Kennecott) pertain to the May 2002 Proposed Plan for the Midvale Slag Superfund Site. Kennecott's comments concern the proposed Remedial Alternatives, and specifically alternative S-5 for the beneficial reuse of slag. In the Midvale Slag Proposed Plan, EPA has selected Remedial Alternative S-4 for the slag, which is to regrade and cover the slag. Kennecott encourages EPA to select a Remedial Alternative that also allows for the beneficial use of slag material, in particular, the copper slag material.*

*As EPA Region 8 is aware, analyses of the material at the Midvale site identified as "copper slag," show that it is not characteristically hazardous and does not leach metals under either the SPLP or TCLP procedures. The copper slag material also is high in iron, a material important for cooling in certain smelting processes. Through previous arrangements with the site owner and EPA Region 8, Kennecott removed approximately 39,546 tons of the copper slag material for coolant in its smelting process. This work was done pursuant to a work plan submitted to EPA. The copper slag material has been handled and managed according to procedures described in the work plan and in accordance with Kennecott's permits. Approximately 220,840 tons of clean fill material were delivered to the site as compensation for the slag removed and slag yet to be removed, in volumes equal to the clean fill provided now or in the future.*

*Because Kennecott intends to take additional copper slag in the future pursuant to its agreement with the site owner, Kennecott urges the EPA to select a Remedial Alternative that allows for the beneficial use and removal of the copper slag material. This can be done in conjunction with Remedial Alternative S-4, thereby allowing other slag material not beneficially reused to be regraded and covered at the site. Allowing the beneficial removal and reuse of the copper slag material should meet the remedial objectives for the site -- i.e., preventing unacceptable exposure risks to human and ecological populations; and ensuring that migration of slag is protective of surface water.*

*Additionally, Kennecott requests that parties such as Kennecott that are able to beneficially reuse material from the site or that provide clean replacement fill material, be provided with adequate liability releases and protections as long as appropriate standards are met.*

*Kennecott appreciates the opportunity to comment on this matter. Please do not hesitate to contact me, or Charlie Masson should you have any questions on this matter. My telephone number is 801-569-7144. Charlie's numbers are 801-569-7133 or 801-569-6545.*

Response:

Kennecott focuses on two issues in its comments: first, that beneficial re-use of slag be permitted and, second, that parties re-using slag receive assurance that they will not incur CERCLA liability as a result of their re-use of slag.

EPA has a strong interest in encouraging beneficial re-use of slag. The agency has previously reviewed Kennecott's activities and determined that as long as the company follows the procedures outlined in the work plan submitted to EPA, no CERCLA liability should be triggered.

## **Comments provided by Cary D. Jones, Snell & Wilmer, L.L.P., Counsel for Utah Transit Authority, on June 26, 2002**

*This firm serves as counsel to Utah Transit Authority (UTA), a Utah public transit district that provides public transit along the Wasatch Front. This letter is deemed to constitute a public comment response relating to the above-referenced Superfund project.*

*UTA is currently proceeding with a rail corridor preservation acquisition from Union Pacific Railroad Company, for approximately 175 miles of rail corridor from Brigham City to Payson. Part of this acquisition includes the Mid-Jordan Line (Bingham Industrial Lead), which is located on a portion of the above-referenced project. The Mid-Jordan Line (Bingham Industrial Lead) is subject to a Prospective Purchaser's Agreement between UTA and the Environmental Protection Agency, which became effective on June 14, 2002, and a Prospective Purchaser's Agreement between UTA and the Utah Department of Environmental Quality, which became effective on April 4, 2002. As stated in those agreements, UTA's prospective use of the Bingham Branch is for a surface passenger rail transportation system that is in accordance with public and private institutional controls.*

*UTA requests that any proposed plan from EPA be coordinated with UTA to make certain compliance with the foregoing Prospective Purchaser's Agreements is maintained, and work is coordinated with UTA's project.*

### Response:

EPA will coordinate remediation activities with UTA, the city, and any prospective property owners at the Site. EPA looks forward to working with the stakeholders on future site remediation and development activities.

## **Comments provided by Dennis C. Farley, Counsel for Union Pacific Railroad Company, on June 20, 2002**

*Union Pacific Railroad Company (UPRR) submits the following comments to the United States Environmental Protection Agency Region 8 (EPA) and the Utah Department of Environmental Quality's (UDEQ) proposed cleanup plan for the Midvale Slag Superfund Site, Operable Unit 2 (Midvale Site) and the recommended preferred alternative presented by the EPA and UDEQ.*

### **General Comment:**

*UPRR is the owner of an active rail line that traverses a portion of the Midvale Site, which will be impacted by the proposed cleanup plan. UPRR has not been involved in preparing the proposed plan, asked to participate or to provide information regarding the proposed cleanup plan, or given the opportunity to address the impacts the plan may have upon UPRR operations. There are specific governmental and statutory regulations that apply to rail operations and safety standards that may limit the excavation and removal of materials on or near a railroad track as well as limit interference with railroad operations in the area. These comments address some of these concerns; however, because of the limited time UPRR has had to review the proposed cleanup plan there may be other issues that must be addressed before any planned cleanup is implemented. UPRR reserves the right to supplement these comments as may be necessary once additional information concerning the plan is provided as requested herein.*

### **Response:**

In response to this comment, EPA met with UPRR representatives on August 28, 2002 and has provided UPRR with all documents related to baghouse dust in EPA's records.

### **Comment No. 1:**

*UPRR is concerned about the Baghouse Dust Pond (BDP) area. The BDP area encroaches upon UPRR property in the vicinity of the railroad trestle bridge and rail line located near the north central portion of the Midvale Site. The BDP originally served the smelter buildings and associated baghouse system. The estimated volume of baghouse dust mentioned in some of the worksheets within the Focused Feasibility Study for Mixed Smelter Wastes (MSW) is approximately 5,100 cubic yards. More recent estimates place the baghouse dust volume closer to 7,000 cubic yards. None of the estimates appear to include the three (3) foot layer of soils (clay) that are targeted for removal below the baghouse dust. Since the preferred remedial alternative is off-site removal and disposal of the baghouse dust, the estimates (assuming the underlying soils receive the same treatment and disposal management as the baghouse dust) may exceed 10,000 cubic yards.*

*Since this MSW, by analytical review, has been specified as a Category 1 waste, the baghouse dust material has been earmarked for treatment to Land Disposal Restriction (LDR) Treatment standards for the constituents of concern (inorganic metals). Therefore, the calculated volume of this material should be more explicitly defined.*

Response:

Since the proposed plan was finalized, EPA has received additional information regarding the location of baghouse dust, a Category I material at the Site. This information was summarized in a technical memorandum dated September 2002 and is in the Administrative Record for this Site.<sup>2</sup>

Prior to the latest evaluation of the baghouse dust area, there was no known contamination on UPRR property. After a more thorough evaluation of the area, it was deemed likely that some of the baghouse dust contamination was under the railroad trestle of UPRR and hence was on UPRR property.

After review of the additional baghouse dust information and the trenching activities, it was determined that more than one pond existed in the smelter area, with the largest pond being located adjacent to and under the current Union Pacific Railroad right-of-way. Trenching operations performed on September 10, 2002 suggest that little baghouse dust remains on site in the area of the former larger baghouse dust pond. Direct contact risk associated with residual materials will be mitigated by covering the area with slag, an appropriate cover, and implementing appropriate institutional controls (including surface water management controls). Conceptual plans prepared by developers indicate this area will be covered with approximately 20 feet of slag to raise it to the elevation of the existing railroad grade. EPA's evaluation of ground water modeling demonstrates that leaving residual baghouse dust material on site will not affect compliance with alternate concentration limits.

EPA appreciates UPRR's quick response in providing information regarding safety standards for excavation activities near the trestle. EPA will continue to work with UPRR in the future regarding related rail issues at this Site.

Comment No. 2:

*The preferred alternative for the baghouse dust material, as presented in the proposed plan, is excavation of the dust and the three (3) feet of underlying soils within the calculated "footprint" of the former BDP area. The BDP area appears to be within UPRR's right-of-way, including beneath the trestle bridge, which spans the current north/south access haul road near the center of the site.*

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<sup>2</sup> Other information located in the site repository regarding baghouse dust issues are as follows: UDEQ comments on baghouse dust pond technical memorandum, UDEQ trenching activity summary, UPRR correspondence, ENTACT field sampling plan and health and safety plan, ENTACT summary report of trenching activities, trip report by CDM on trenching activities, baghouse dust pond technical memorandum, and a final baghouse dust pond chronology memorandum.

*UPRR is concerned that the proposed removal activity will impact the engineered stability of the trestle bridge and the raised berm supporting the track adjacent to the trestle. Union Pacific Railroad has clearly defined engineering requirements, which govern construction and excavation activities adjacent to tracks and the types of material that can be used as backfill and ballast. These requirements are based on Federal Railroad Administration regulations, sound engineering science and past experience.*

Response:

EPA has received UPRR's structural engineering requirements. They are available for review in the Administrative Record.

*The proposed plan does not discuss obtaining clearances from UPRR prior to performing the work nor does it address the impact the work may have upon the existing railroad structures, embankment berm and trestle bridge. The EPA proposed plan must address how these very important safety issues will be resolved before any cleanup plan is implemented. As noted above, UPRR has not been invited to participate in any discussions concerning the safety issues involving UPRR's rail line arising out of the proposed cleanup plan.*

Response:

EPA will coordinate with UPRR on all access and remediation activities on UPRR property.

*As an alternative to the removal proposed in the cleanup plan, the EPA should consider a "cap in place" remedy for the baghouse dust materials. A "cap in place" remedy would balance the safety/stability considerations associated with excavations near the rail line embankments and trestle bridge, in contrast with the incremental benefit gained by removal of the material, especially considering the fact that the ground water beneath the site is already impacted. Because an excavation approach may be impractical, EPA should incorporate sufficient flexibility into the baghouse dust remedy so that a "cap in place" alternative could be implemented without a ROD amendment.*

Response:

EPA agrees that a "cover in place" remedy is most appropriate for residual baghouse dust materials given their location and estimated volumes.

**Comment No. 3:**

*According to the document entitled, "Appendix B; Summary of the Final Treatability Study Data Report-Solidification/Stabilization for Midvale Slag Superfund Site, Operable Unit No. 2, Midvale, Utah; July 31, 1997" ("Treatability Study"), page B-2 suggests that no treatment recipe was found to treat the baghouse dust. UPRR formally requests that a copy of the entire Treatability Study be provided for its review. UPRR would also like to*

*receive any updates to the Baghouse Dust Treatability Study that may have been performed since the initial Treatability Study in 1997.*

Response:

EPA has made this document available to UPRR.

**Comment No. 4:**

*The approach mentioned in the last paragraph of Page B-3 of the Treatability Study regarding the addition of other MSW materials to the baghouse dust is unacceptable for several reasons, including the incremental increase of total waste volume and the amount of baghouse dust waste that must be treated to LDR standards, thus increasing the volume of waste to be treated and the final post-treatment disposal costs. The Treatability Study suggests that the waste stream "resists" attainment of associated LDR treatment standards. The EPA should explore the possibility of granting an LDR Treatment variance for this small quantity of material prior to imposing an extremely expensive and unnecessary treatment regime. By limiting the quantity of waste material that needs to be treated and targeting a Minimum Technology Requirement land disposal unit, the EPA would achieve significant waste minimization and cost savings.*

Response:

EPA is anticipating leaving residual baghouse dust material in place in the former baghouse dust pond area. Because there will be no excavation or placement of materials, land disposal requirements will not be triggered.

**Comment No. 5:**

*The slag which composes the railroad embankment berm is predominantly large diameter (~50mm), air-cooled slag. As noted in the Cleanup Plan, studies have clearly established that this type of slag material has been shown by analytical comparisons to be the least likely slag to have leaching potential for the constituents-of-concern (arsenic, lead, cadmium, etc.). UPRR strongly recommends that the preferred alternative for the air-cooled, large diameter slag material that composes the railroad embankment and ballast be limited to leaving this material in place without the application of a soil materials cap.*

*Access to the UPRR right-of-way is limited to UPRR employees or its contractors and placement of a soil cap on the steeply sloping embankment material would not substantively increase protection to human health or the environment. In fact, placement of soil along the embankment and/or ballast may result in increased erosion and sediment loading to adjacent drainages.*



*Union Pacific formally requests that the existing slag that composes the railroad bed and embankments be exempted from the cover requirements proposed in the Plan for Category 4 slag.*

Response:

EPA concurs with the above statements and has not proposed covering the railroad ballast material since access is limited in the right-of-way.

**CONCLUSION**

*Union Pacific appreciates the opportunity to provide these written comments to the proposed cleanup plan. UPRR would like the opportunity to meet with the EPA, UDEQ and other parties involved in the cleanup prior to finalization of the proposed plan to discuss these issues in more detail and to ensure that safe and efficient railroad operations will be maintained during remediation of the Site.*

**Comments provided by Robert P. Hill, Ray Quinney & Nebeker, Counsel for Jordan Valley Water Conservancy District, dated June 14, 2002**

*We are writing on behalf of Jordan Valley Water Conservancy District of 8215 South 1300 West, P.O. Box 70, West Jordan, Utah 84088-0070 to provide preliminary comments on the proposed plan for the cleanup of the Midvale Slag Superfund Site and to request that the comment period on the proposed plan be extended beyond the current June 19 deadline.*

*Jordan Valley is the largest municipal water district in Utah, serving one-third of the State's population. The District includes half of Utah's fastest growing cities within its boundaries. Jordan Valley is responsible not only for continuing to provide high quality municipal and industrial water to the current population, but also for developing additional water sources to cope with projected growth in the Salt Lake Valley.*

*Among numerous other water conservation and development projects that have been undertaken by the district to meet the area's future water needs are over 100 shallow wells that will be drilled along the west bank of the Jordan River over the next several years. These include wells which are being drilled in cooperation with the EPA and the Utah Department of Environmental Quality for the purpose of replacing contaminated ground water in Operable Unit 2 of the Kennecott South Zone Superfund Site. The first four shallow wells have already been approved by the State of Utah, and others will follow due course.*

*Jordan Valley objects to the preferred alternative, GW-2, identified in the proposal for cleaning up the Midvale Slag OU2 site. The proposal contemplates virtually no action with respect to contaminated ground water on the east side of the Jordan River, but anticipates that the contaminated ground water will be allowed gradually to migrate into and be dispersed by the Jordan River over time. The proposal completely fails to account for the changes in ground water dynamics which will be caused as the uncontaminated portions of the shallow aquifer are developed over the next few years.*

*This concern can be easily visualized by reference to the diagram on page 17 of the proposed plan. The Midvale Slag contaminated ground water is shown lying on the east side of the Jordan River. Jordan Valley's shallow wells will be located on the west side of the river, north and south of the Midvale Slag site. As the demand on the shallow aquifer on the west side of the river increases over time, there is a substantial likelihood that the contaminated ground water on the east side of the river will be drawn both into the Jordan River at an increased rate and beyond the river into the currently uncontaminated areas which are being developed for municipal use, causing contamination of the new municipal wells.*

*A related concern is that, if EPA now fails to adopt a timely, proactive plan to contain or treat the contamination, as the aquifer dynamics change over time from the*

*static scenario contemplated by the proposal, EPA will be forced in the future to impose or to require affected communities to impose institutional controls on wells west of the river to prevent the spread of the Midvale contamination and to protect public health. Such controls would prevent the use of this essential aquifer and undermine both the future water supply for a substantial portion of the Salt Lake Valley and the ground water cleanup and replacement which EPA itself has undertaken west of the river in the Kennecott South Zone Superfund Site.*

*Jordan Valley requests that EPA evaluate the dynamics of the shallow aquifer on both sides of the Jordan River in light of the pending use of the as-yet uncontaminated shallow aquifer west of the river, and modify the proposed remediation for the Midvale Slag Site to incorporate active ground water cleanup and/or containment measures to protect this essential public resource.*

*Jordan Valley also requests that the comment period on the proposed plan be extended to permit further evaluation of and comment on these issues.*

Response:

EPA responded to the district's request for extension by adding an additional 30 days to the comment period for the proposed plan, thus, extending the comment period through July 19, 2002. The district submitted a second comment letter on July 18, 2002. In that second letter, the district reiterated and expanded on the general concerns raised in its July 14 letter, above. EPA has responded to all of the district's comments below in the context of the district's July 18 letter.

## **Comments provided by David G. Ovard, CEO and General Manager, Jordan Valley Water Conservancy District, on July 18, 2002**

*Thank you for giving us the opportunity to submit additional, detailed comments on the proposed plan for the cleanup of Operable Unit 2 of the Midvale Slag Superfund Site. By letter dated June 14, 2002 we have previously provided a brief summary and overview of our concerns. We will not restate that summary here, but refer you to the June 14 letter for general background and an introduction to our concerns. With this letter, we intend to flesh out the summary previously provided and submit additional, detailed comments for your consideration.*

*After carefully reviewing the Operable Unit 2 Proposed Plan of May, 2002, together with the final focused feasibility studies for ground water, mixed smelter waste and slag in OU2 upon which the plan is based, we have concluded (i) that the baseline risk assessment effectively ignored perhaps the most significant risks to human health and the environment posed by the contaminants present at OU2, (ii) that the plan fails to accomplish the remedial action objectives set forth in the plan, and (iii) that the proposed plan does not comply with Superfund evaluation criteria. The preferred alternatives, MSW-2 and GW-2, are both inadequate to accomplish their stated objectives.*

### ***1. The baseline risk assessment effectively ignored perhaps the most significant risks to human health and the environment posed by the contaminants present at OU2.***

*The purpose of the baseline risk assessment is to identify the potential risks to human health and the environment posed by conditions at the site. In preparing the risk assessment, EPA considered risks presented by teenagers trespassing on the site, plants and wildlife at the site, possible future residents living at the site, workers in future business, industry and construction at the site, future recreational visitors to the site, fisherman and plants and wildlife.*

*Lead and arsenic from the site continue to migrate into the shallow ground water aquifer. The shallow aquifer is an important source of drinking water for the southwest Salt Lake Valley. The Jordan Valley Water Conservancy District (the District) and others are currently developing public water supplies from within this important aquifer. Demands on the aquifer will substantially increase in the future. Nevertheless, EPA does not even list development of and increasing dependence on the shallow aquifer as a scenario of concern. The proposed plan naively assumes that flow rates and patterns in the shallow aquifer will remain unchanged for the next 300 years, notwithstanding the substantial development of drinking water wells in the aquifer that is already under way. The plan fails adequately to consider the changing dynamics of the ground water system or the inevitable spread of contamination from the site into presently uncontaminated portions of the aquifer and public drinking water supplies.*

*When contacted about these risks, EPA representatives have taken the rather cavalier position that it is the water agencies' and the public's own fault if they drill wells or drink the water, even though the projected wells are located in off-site areas where the aquifer is presently uncontaminated. Instead of remediating the site to protect the public water supply, the proposed plan would effectively condemn the public water supply to protect EPA's decision to take no action.*

Response:

EPA agrees that the purpose of the baseline risk assessment is to identify the potential risks to human health and the environment posed by conditions at the site. As noted by the district, in evaluating risks to human health, EPA considered the following exposure scenarios:

- Teenagers trespassing on the site (current exposure)
- Plants and wildlife at the site (current and future exposure)
- Anglers (current and future exposure)
- Residents living at the site (future exposure)
- Workers in business, industry, and construction at the site (future exposure)

EPA's evaluation of ground water use, and the risks associated with such use, can be found in several sections of the ground water focused feasibility study (GW FFS). Regional hydrogeology (including analysis of the Perched Unit, the Upper Sand and Gravel or Shallow Aquifer, and the Deep Principal Aquifer) is described in the GW FFS on pp. 1-21 through 1-29. Potential development of the shallow aquifer as a municipal source is discussed on pp. 1-29 through 1-31. Use of ground water as a source of drinking water was evaluated as part of the potential future residential use scenario; see GW FFS Appendix A, Attachment 3, p.6.

As the district notes, EPA does not consider development of and increasing dependence on the shallow aquifer as a scenario of concern. There are a number of reasons for this conclusion.

(a) Reasonably anticipated future land use. EPA policy directs that decision makers take into account reasonably anticipated future land uses when making remedial decisions. The scenarios used to evaluate risks to human health are based on anticipated future land uses as defined by the City of Midvale (which has jurisdiction over development of the Site) and the property owner. The risk assessment scenarios take into account potential residential, commercial, industrial, and recreational uses anticipated in the city's Bingham Junction Master Plan, which has been adopted by the City Council. This plan underlies the Site's current and future zoning and is the foundation for the re-development options now being developed by the property owner. Nothing in the

Bingham Junction Master Plan, the Site's zoning, or the property owner's re-development plans contemplates use of the Shallow Aquifer as a water supply for future residents, workers, or recreational users.

(b) Existing water quality. The district's assertion that the Shallow Aquifer is an important source of drinking water for the southwest Salt Lake Valley is not supported by the water quality standards adopted by the State of Utah for this reach of the Jordan River and its alluvium (of which the shallow aquifer is a part). Under the State's water quality management program, this reach of the river has not been designated as a "beneficial use" for drinking water. The State's adopted water quality standards relate to agricultural uses, fisheries, and recreational use; these uses were considered by EPA when evaluating risks and developing alternate concentration limits (ACLs).

Water in the alluvial (US&G) Aquifer is considered to be a potential source of drinking water under Utah's ground water protection program. However, water in both the Jordan River and its alluvial aquifer are presently not suitable for human consumption without treatment. High levels of naturally occurring total dissolved solids (TDS) render the uncontaminated portions of the aquifer unsuitable for human use. The Jordan River also carries high concentrations of metals, a tangible reminder of the district's history as a mining, milling and smelting region. Both TDS and metals (including arsenic, the contaminant of concern in the contamination plume on the Midvale site) can be treated to levels safe for human consumption through readily available treatment technologies. Reverse osmosis, a form of treatment routinely used by public water suppliers, can effectively remove all dissolved solids (including TDS and metals such as arsenic) from water intended for human consumption.

(c) Shallow aquifer as a source of drinking water: present and future risk. There is virtually no present or future risk to human health from use of the Shallow Aquifer as a source of drinking water. EPA and the property owner can restrict use of private wells on the site through deed restrictions and similar private-party land use restrictions. The city of Midvale can provide further controls through land use regulations. Should a public water supplier decide to develop the shallow aquifer as a source of drinking water, that use would be governed by regulations promulgated under the Safe Drinking Water Act. Under this statute, all public water suppliers are required to meet legally enforceable concentration limits for a list of identified contaminants (including arsenic) at the tap. The district is a public water supplier subject to these regulations; it is therefore required to treat water to levels fit for human consumption before delivering water to its users.

In fact, the water treatment plant now under construction by the district includes reverse osmosis technology and is designed to address the kinds of contaminants found in the Shallow Aquifer at Midvale. (This treatment plant is partially funded through a settlement arising from the Kennecott South Zone Superfund site, the "wells" referenced in the district's June 14 letter.) Thus, should a decision be made to develop the Shallow Aquifer as a source of drinking water, the District will be well-equipped to treat both naturally occurring TDS contamination and the metals-loading resulting from the region's history as a mining district.

(d) Aquifer flow rates/patterns and contaminant migration. In support of its view that EPA has failed to adequately evaluate risk, the district asserts that the proposed plan fails adequately to consider the changing dynamics of the ground water system or the inevitable spread of contamination from the site into presently uncontaminated portions of the aquifer and naively assumes that flow rates and patterns in the shallow aquifer will remain unchanged for the next 300 years. On the contrary, modeling performed by EPA demonstrates that pumping in the Shallow Aquifer may change flow rates and patterns over time. Should the Shallow Aquifer be developed as a source of drinking water, the nature and rate of change within the aquifer will be determined by the water management decisions made about where wells are placed and the rate of pumping (flow rates) at which wells are operated.

For example, the district could choose to place its production wells outside the zone of influence affecting ground water at the Midvale site. Under this placement scenario, there is no predicted change to flow rates and patterns and the contamination plume does not migrate off site. At the other end of the spectrum, should the district choose to locate a production well directly across the river from the site, and should this well be pumped at a rate of 700 gpm, the production well would induce flows beneath the Jordan River and into uncontaminated portions of the aquifer. There are a number of scenarios between these two extremes that would allow production of shallow aquifer water with little or no disruption to existing patterns and flow rates. Thus, decisions made by the district and State governing bodies will ultimately determine if and by how much patterns and flow rates within the Shallow Aquifer are changed in the future.

The presence of arsenic contamination in the Shallow Aquifer was documented and made public many years ago before the district made plans to develop the Shallow Aquifer as a source of drinking water. EPA has tried to coordinate planning with the district over the years, meeting with district representatives many times between the spring of 1999 and the spring of 2002.

EPA hired the district's consultant to help evaluate an alternative that would combine active pumping with the district's operation of its treatment plant to deliver treated water to users. (See alternative GW-4, the single high yield well, described in the GW FFS on pp. 3-4, screened on pp. 3-9 through 3-10, and evaluated in detail on pp. 4-28 through 4-41.) Ultimately, this alternative was found to be unimplementable because the district would not commit to accepting water from the high yield well for treatment, and because of the district's request for Superfund dollars to pay for plant construction costs. (Note that CERCLA prohibits EPA from spending Superfund dollars to develop public water supplies.)

(e) Remedial alternatives. Finally, in its comments, the district implies that EPA has rejected remediation alternatives that will address arsenic contamination on a near-term basis. This is inaccurate. Under the most aggressive pump-and-treat scenarios, arsenic contamination is projected to persist within the Shallow Aquifer for 90 to 300 years, (GW FFS p. 4-56, evaluation of long-term effectiveness and permanence). Thus, active

treatment would not remediate arsenic contamination in a time frame that is meaningful for the district's water development plans.<sup>3</sup>

**2. *The plan fails to accomplish the remedial action objectives set forth in the plan.***

*EPA states that its ground water remedial action objectives include prevention of unacceptable exposure to current and future human populations due to direct contact or drinking contaminated ground water, and prevention of movement of contaminated ground water into uncontaminated parts of the shallow and deep aquifers. Yet the plan does absolutely nothing to accomplish these purposes. As noted above, the plan ignores the fact that, given the already established plan of development of these critical, currently uncontaminated water supplies, contamination from the site will migrate into the shallow and deep aquifers, and the public will be exposed to direct contact.*

Response:

As noted above, management decisions regarding location and operation of production wells can avoid or minimize changes to current conditions, preventing migration of the plume. In addition, there is virtually no present or future risk to human health from use of the Shallow Aquifer as a source of drinking water. See response 1 (c), above.

**3. *The proposed plan does not comply with Superfund evaluation criteria.***

*The first and most important criterion for evaluating any proposed Superfund remedial action is overall protection of human health and the environment. For all of the reasons stated, the alternatives proposed in the plan completely fail to protect an important drinking water source.*

Response:

See responses to comments 1 and 2. The Superfund evaluation criteria referenced by the district were promulgated in the National Contingency Plan (NCP) at 40 CFR 300.430(e)(9)(iii). EPA's evaluation of the possible alternatives against these criteria can be found in Section 4 in each of the three focused feasibility studies (ground water, mixed smelter wastes and slag). The evaluation of the proposed alternative, GW-2, Limited Action with Alternate Concentration Limits, is found in GW FFS pp. 4-5 through 4-10. EPA's analysis of potential risks to human health is described in the response to comment 1 above.

It is worth noting that one of the NCP's remedy selection criteria is state acceptance. UDEQ considers the Limited Action Alternative for ground water, with its use of ACLs,

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<sup>3</sup> EPA evaluated three alternatives based on extraction and active treatment: GW-3, involving use of multiple wells to extract ground water; GW-4, use of a single, high-yield well; and GW-5, use of a French drain. These alternatives are described at GW FFS pp. 3-3 through 3-5; preliminarily screened at pp. 3-8 through 3-11; and evaluated in detail at pp. 4-10 through 4-52.



monitoring, and institutional controls, to be protective of human health and the environment and to be the most appropriate approach to ground water at Midvale slag based upon the assessment of the Superfund evaluation criteria. For this reason, UDEQ has advised EPA that committing the State to expensive ongoing operation and maintenance of an extraction/treatment system for one or more centuries would not be a cost-effective expenditure of State resources.

***4. Alternative MSW-2 fails to protect human health or the environment.***

*EPA's preferred alternative for remediation of mixed smelter wastes fails to protect either human health or the environment for each of the following reasons:*

- a. The 1998 Supplemental Remedial Investigation found 1,300,000 ppb arsenic in perched ground water zone. Perched aquifer contamination should be considered a Category 1 waste. It appears to contain the highest concentration of arsenic found at the site and serves as a source material for deeper ground water contamination. MSW-2 places substantial emphasis of remediating Category 1 wastes, but fails to acknowledge that the perched aquifer is the most highly contaminated material at the site.*
- b. Addressing the MSW cleanup and perched aquifer contamination with a combined remedial action may offer cost savings.*

Response:

EPA believes that perched unit soils are properly classified as Category 2 wastes. Category 1 wastes are classified as materials with high direct contact risk and with high potential to leach to ground water. Isolated areas of the Perched Unit, where baghouse dust material is close to the surface have been classified as Category I wastes. Exposure risks in other areas of the Perched Unit from direct contact are extremely low due to the contaminants' location (at a depth of 30 to 40 feet). Potential risks to future workers engaged in excavation work can be managed through local land use regulations. The City of Midvale already has such controls in place for other locations where contamination may exist at depth, and the city issues permits for excavation in the public right-of-way to notify of potential hazards and provide requirements for excavation. The city oversees the excavation work to ensure that permit requirements are fulfilled.

With respect to leachability, EPA evaluated excavation and disposal of perched unit soils in the Mixed Smelter Waste FFS. Ground water modeling demonstrated that excavation and removal of perched unit soils made no meaningful difference to future ground water remediation rates, whether either active treatment or the limited action alternative were under consideration. The analysis determined that excavation of perched unit soils offered no additional protectiveness for a very high cost relative to other alternatives considered. Transport of arsenic through the Perched Unit would be directly related to water use on site, and these uses (principally irrigation and storm water) can be managed through site planning and land use regulations.

Soils within the Perched Unit are not the most highly contaminated materials found on site. Baghouse dust and possible residual deposits of arsenic trioxide present high exposure risks; these materials are classified as Category 1.

The district refers to the Perched Unit as an "aquifer." EPA believes this categorization is somewhat misleading. The Perched Unit consists of a mixture of loams, clays, and gravel, interspersed with fine sand and sand/clay lenses. There is no continuous saturated zone within the unit, simply dispersed lenses with varying degrees of saturation. The hydrogeological characteristics of this unit are such that it cannot yield useable quantities of ground water to a well.

During the Supplemental Remedial Investigation, dissolved arsenic was measured at 1290 mg/L in a Perched Unit ground water sample obtained from well PW-103. This is the highest concentration of arsenic observed in ground water at the Site but not the highest concentration when compared to all media at the Site. Concentrations observed in the soils of this zone are also not among the highest observed at the Site. For example, the peak arsenic concentration observed in the Perched Unit soils, 4,014 mg/kg, occurs at a depth of 40.5 to 43 feet at the MW-103/PW-103 location (Supplemental Remedial Investigation Report 1998), whereas the mean arsenic concentration in the calcine waste is 6,113 mg/kg and in baghouse dust is 13,358 mg/kg (Mixed Smelter Waste FFS). The ground water in the Perched Unit is not currently being withdrawn for use, and the contaminated soils in the unit are located at depths of over 30 feet. As a result, there are no direct exposure pathways for these materials.

The presence of the contaminated media within the Perched Unit has been considered in ground water modeling simulations. Modeling indicates that this contamination will continue to act as a source of contamination for the US&G Aquifer for many years; however, predicted contaminant concentrations within the US&G Aquifer resulting from continuing discharge from the Perched Unit are within limits considered protective of human health and the environment. Removal of all contaminated material was evaluated in the Mixed Smelter Waste FFS. Alternatives MSW-5 and MSW-6 considered the complete removal of all wastes, contaminated soils, and contaminated ground water within the Miscellaneous Smelter Waste Area, including the Perched Unit consistent with a goal of restoring the US&G Aquifer to beneficial use. The evaluation concluded that, even with complete removal, restoration of the US&G Aquifer could not be achieved for at least 90 to 300 years and that such a removal would have a very high cost. Capital costs alone for alternative MSW-6 were estimated to be over \$67 million.

##### ***5. Alternative GW-2 fails to protect human health or the environment.***

*EPA's preferred alternative for remediation of ground water also fails to protect either human health or the environment:*

*a. GW-2 is characterized as a "limited action" alternative. This is misleading. It is in fact a no-action alternative. EPA simply proposes to monitor the continuing migration of contaminated ground water as it spreads beyond the site.*

Response:

The district states that contaminated ground water is projected to spread beyond the site. This statement is inaccurate. At present, the arsenic plume is located entirely within that portion of the site known as "Operable Unit 2." The arsenic plume discharges to the Jordan River. There are no other off site discharges, and migration off site is not projected in the future.

Concentrations at the point of discharge to the river do not present a threat to human health at this time. Ground water modeling indicates that this situation will not change in the future. Although concentration levels are projected to rise as arsenic continues to move through the plume, discharge rates to the river will remain below levels that present a risk to human health and the environment.

The proposed remedy relies on natural processes to remediate arsenic contamination over time coupled with institutional controls to prevent contact with contaminated soils or ground water. The ACLs calculated for the discharge to the river are intended to provide a safety net, allowing contamination concentrations and movement to be monitored.

*b. The proposed plan makes vague references to "institutional controls." It provides no information, however, on what those controls might be, who will implement the controls, what the controls might cost or who might be impacted by the controls. It is understandable that EPA, having failed to consider the real risks to drinking water supplies in the feasibility studies, is not in a position to propose any concrete measures to address those unstated risks. More importantly, however, without knowing what the controls might be, it is impossible to evaluate what adverse impacts the controls might have on the public, or what direct and indirect costs and burdens such controls will impose on the community. By trying to save the immediate cost of active remediation, EPA will be imposing much greater, long-term costs on the public as alternative water sources must be found to replace the sources lost due to EPA's decision to take no action. It is disingenuous to promote GW-2 as a plan to protect the public without identifying and disclosing for public review or comment the real public costs and consequences of this low budget, no action alternative.*

Response:

The district accurately notes that the proposed remedy relies on institutional controls, then inaccurately states that EPA "provides no information" on what those controls might be, who will implement the controls, what the controls might cost or who might be impacted by the controls. In fact, EPA discussed potential institutional controls at some length in the three feasibility studies and included costs for institutional controls in

detailed cost calculations. See GW FFS pp. 2-28 through 2-32, including Table 2-8; Table 4-2, Remedial Alternative Cost Summary, Alternative GW-2.

Institutional controls have been discussed extensively with representatives of both Midvale City and the property owner, the two entities responsible to implement controls. Both have expressed willingness to implement appropriate restrictions and regulations. As noted above, Midvale currently has regulations in place to manage risks from contamination located at depth, and the city plans to extend these regulations to the Midvale site as the Bingham Junction redevelopment plan proceeds. Institutional controls agreed to by the property owner will be incorporated into a consent decree settling liability at the site.

Finally, as noted above, under the active treatment alternatives evaluated in the FFS, remediation would take anywhere from 90 to 300 years. Institutional controls would be required over these time periods to ensure that people did not come into contact with contaminated soils or ground water while remediation was underway. Thus private party land use restrictions and local government land use controls will be necessary under any remediation scenario. Furthermore, the active treatment remedies considered in the FFS would impose very high long-term operation and maintenance costs. These costs would be borne by the public through the State DEQ.

*c. The location of the arsenic hits in the perched aquifer (and the limited lateral extent of the perched aquifer) indicate the perched aquifer is the continuing source for arsenic contamination in the shallow aquifer. The perched aquifer is predicted to continue contaminating the shallow aquifer for 275 years.*

Response:

The Perched Unit has been considered a source of arsenic contamination to the US&G Aquifer in evaluations of contaminant fate and transport at the site. In the Supplemental Remedial Investigation, the mass of arsenic in the Perched Unit was estimated to be sufficient to support the current approximated loading rates for almost 300 years. The predicted contaminant concentrations within the US&G Aquifer resulting from this discharge from the Perched Unit are within limits considered protective of human health and the environment under the proposed plan.

*d. The perched aquifer is present only in a limited area of the site at about 35 feet below ground surface, and should be remediated to protect public water supplies in the shallow aquifer.*

Response:

The depth of contamination in the Perched Unit exceeds a depth of 40 feet. Removal of all contaminated material was evaluated in the mixed smelter waste FFS. The evaluation concluded that, even with complete removal, restoration of the US&G Aquifer could not

be achieved for at least 90 to 300 years and that such a removal would have a very high cost (\$67 million for capital alone).

*e. EPA should reconsider alternatives for restoration of the perched aquifer to eliminate it as the long-term contaminant source for ground water at the site. GW-2 does not address NCP expectations because it does not treat principal threats ñ specifically the perched aquifer, which serves as the ñ liquid ñ source of contamination migrating to the underlying shallow aquifer. Given the very long time frame (275 years) for the perched aquifer to continue to serve as a contaminant source, EPA should consider at least containment via a low permeability wall with limited ground water extraction in the shallow aquifer to prevent continued migration of the perched aquifer contaminated source.*

Response:

As noted above (see comment 4), EPA believes that the Perched Unit is not an ñ aquifer. ñ The Perched Unit consists of a mixture of loams, clays and gravel, interspersed with fine sand and sand/clay lenses. There is no continuous saturated zone within the unit, simply dispersed lenses with varying degrees of saturation. The unit does not yield significant volumes of water to wells, making it unsuitable as a water source.

Contamination within the Perched Unit is found at variable levels, at depths reaching 40 to 45 feet. Volume calculations performed to evaluate possible excavation and disposal of soils within the unit yielded estimates of 517,000 cubic yards. As discussed in the response to comment 4, above, analysis determined that excavation of Perched Unit soils offered no additional protectiveness for a very high cost relative to other alternatives considered.

The use of physical and hydraulic barriers for lateral containment of contamination in both the US&G (Shallow) Aquifer and the Perched Unit were evaluated in the FFS (see GW FFS pp. 2-26 through 2-51.) Physical and hydraulic barriers for the Perched Unit were eliminated from further consideration based on effectiveness (see p. 2-48). Physical barriers for containment of contaminated ground water in the US & G aquifer were also eliminated based on effectiveness (see p. 2-49).

Since the ground water in the Perched Unit cannot be withdrawn for use and the contaminated soils in the unit are located at depth, there are no direct exposure pathways for these materials. The Perched Unit has been considered a source of arsenic contamination to the US&G Aquifer in evaluations of contaminant fate and transport at the Site. Predicted contaminant concentrations within the US&G Aquifer resulting from discharge from the Perched Unit are within limits considered protective of human health and the environment under the proposed plan.

*f. Site ground water data show a large arsenic plume is present at the site. One remedial action objective is prevention of future migration of contaminants of concern into previously uncontaminated portions of the shallow*

*aquifer. Modeling conducted by EPA shows that under GW-2 the concentration of arsenic in the shallow aquifer will increase to more than double its current concentration in 130 years, and that the arsenic plume will increase in size. The preferred alternative would therefore result in contamination of previously uncontaminated portions of the aquifer. GW-2 does not meet the remedial action objective because it will result in spreading of contamination into previously uncontaminated ground water. The arsenic plume will continue to spread without active ground water remedies. EPA should require active ground water extraction and treatment to prevent spreading of the plume to uncontaminated portions of the aquifer.*

Response:

The modeling work cited by the JVWCD is presented in Appendix 6B of the Supplemental Remedial Investigation Report found in the Administrative Record for the Site. The district's references to the modeling work are imprecise and lack proper reference to the assumptions utilized in the evaluation and the results obtained. The scenario considered, Scenario 1a, provided an evaluation of arsenic transport in the US&G Aquifer under current conditions. The results indicate that concentrations will increase within the plume but that lateral expansion of the arsenic plume will be negligible. The migration of the arsenic plume downgradient, as shown in the modeling results, is due to the inability of the modeling method used to simulate ground water discharge to the Jordan River. Data indicate that the arsenic plume in the US&G Aquifer is entirely captured by the Jordan River. Therefore, implementation of the limited action alternative for ground water does not result in the contamination of previously uncontaminated portions of the US&G Aquifer.

Spread of contamination to the Deep Principal Aquifer is also extremely unlikely. The migration of the arsenic contamination from the US&G Aquifer to the Deep Principal Aquifer would require a reversal in the flow direction between the two aquifers. Such a reversal could only be created through additional development of the Deep Principal Aquifer. Additional drawdown in the Deep Principal Aquifer is highly unlikely since the aquifer is legally closed to additional ground water appropriation in the Salt Lake Valley and the site is part of the Sharon Steel Restricted Area.

*g. The shallow aquifer and the deep principal aquifer are current sources of public drinking water. The remedial action objectives indicate that all remedies must be protective of these aquifers as drinking water sources. EPA modeling indicates that Murray City Well No. 9, which is partially screened in the shallow aquifer, is expected to draw the Midvale arsenic plume towards the well. The modeling indicates the arsenic concentration at the Murray City well will increase to 50 ug/L (5 times the maximum contaminant level (i MCLi) of 10 ug/L) in 200 years. GW-2 is not protective of the aquifers as drinking water sources and will allow arsenic contamination to be drawn towards the Murray City well, as well as numerous additional wells that will be developed in the shallow aquifer in the near future. EPA should require active ground water extraction and*

*treatment to prevent offsite migration and impacts to drinking water sources from the Midvale plume.*

Response:

The modeling work cited is presented in Appendix 6B of the Supplemental Remedial Investigation Report (Sverdrup 1998). The district's references to the modeling work are imprecise and lack proper reference to the assumptions utilized in the evaluation. It is important to note that the simulations cited are not predictions of future conditions. Hypothetical conditions were assumed and resultant arsenic transport evaluated. The assumed conditions are very different than those observed today and are not consistent with ground water management as provided for in the Salt Lake Valley Ground Water Management Plan.

Migration of the arsenic contaminated ground water in the US&G Aquifer at the site was examined in Scenario 2 considering the following assumed conditions:

- Ground water development has resulted in significant decreases in water levels in the US&G Aquifer (presently there is little to no development of the aquifer in the vicinity of the Site).
- The Jordan River becomes a losing stream (presently the Jordan River is gaining).
- The flow direction in the US&G Aquifer changes to the north (from the presently observed northwest).
- The source of arsenic is constant (actually will decrease over time).

Ground water development in the US&G Aquifer is presently limited and the State engineer has prohibited additional development of the Deep Principal Aquifer at the Site. Therefore, attaining conditions similar to the assumptions is unlikely.

*h. GW-2 relies on alternative concentration limits (i ACLs) in accordance with CERCLA Section 121(d)(2)(B)(ii). An ACL for ground water may not be established if a point of human exposure is assumed to exist. The District has prepared plans and filed water rights for use of the shallow aquifer that are impacted by contamination from the site. However, EPA failed to consider the District's wells and water rights as points of human exposure in proposing ACLs. EPA has also conducted modeling of Murray City Well No. 9 and concluded that arsenic contamination from the site will be drawn towards the well and eventually exceed the MCL. EPA should not proceed with ACLs because points of human exposure exist at the District's wells and Murray City Well No. 9.*

Response:

The district states that an ACL may not be established if a point of human exposure is assumed to exist.<sup>1</sup> The district apparently misreads the applicable rule. Section 121(d)(2)(B)(ii) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) prohibits use of any process for establishing ACLs for hazardous constituents in ground water that assumes a point of human exposure beyond the boundary of a facility *except where three specific conditions are met* (emphasis added):

- There are known and projected points of entry of such ground water into surface water.
- On the basis of measurements or projections, there is or will be no statistically significant increase of such constituents from such ground water in such surface water at the point of entry or at any point where there is reason to believe accumulation of constituents may occur downstream.
- The remedial action includes enforceable measures that will preclude human exposure to the contaminated ground water at any point between the facility boundary and all known and projected points of entry of such ground water into surface water.

If these criteria are met, then the assumed point of exposure may be at the known and projected points of entry.

Thus, if restoration of ground water is not practicable and there is an assumed point of human exposure beyond the boundary of a facility and the three statutory conditions are met, then alternate concentration limits may be used (in lieu of applicable or relevant and appropriate requirements) to protect human health. At this site, discharge from the contaminant plume into the Jordan River is the assumed point of human exposure. ACLs will be set for this location. Numeric performance standards will be established for wells identified as the point or points of assessment. Additional points of assessment will be established in and around the plume.

There are presently no other points of human exposure on or off the Midvale site. An upward gradient exists between the Deep Principal Aquifer and the US&G Aquifer and within the US&G Aquifer that prevents downward migration of contamination. Such conditions prevent the migration of contamination toward Murray City Well #7 and its wellhead protection area. Restrictions placed on the development of the Deep Principal Aquifer also provide for maintaining conditions that prevent the migration of contamination to other municipal wells. Contaminated ground water lies within the Sharon Steel Restricted Area (Salt Lake Valley Ground Water Management Plan). The transfer of water rights into this area is prohibited. Institutional controls will be provided to prohibit development of US&G Aquifer at the Site. As a result, it is very unlikely that development of the US&G Aquifer will result in ground water flow to the north toward Murray City Well #7.



As discussed in response 1 (c), above, the district's plans to develop the shallow aquifer as a source of drinking water do not create a future risk of human exposure. Should the district decide to deliver water from the shallow aquifer to its users, the point of human exposure would be at the tap. As a public water supplier governed by the Safe Drinking Water Act, the district would be required to deliver water that has been treated to drinking water standards at the tap, the assumed point of human exposure within the meaning of CERCLA §121.

*i. GW-2 relies on monitored natural attenuation (MNA), in combination with ACLs and unspecified institutional controls. EPA guidance indicates MNA may be appropriate (i) when it can be effective in a reasonable time frame, and (ii) when historic data demonstrate a clear trend of decreasing or stabilized concentrations at the plume boundaries. For the Midvale Slag Site neither of these conditions is met. The anticipated time frame EPA gives for MNA to flush through the arsenic contamination is more than 300 years. This is not a reasonable time frame given that removal of the perched aquifer source could decrease this time by 275 years (EPA's estimated time for Perched aquifer to continue to act as a contaminant source). The existing ground water data show increasing arsenic concentration trends and EPA modeling predicts that arsenic concentrations in the shallow aquifer will continue to increase for over 100 years. Clearly, the contaminant plume is not stabilized or decreasing in concentration. EPA should not select MNA as the preferred alternative for these reasons. EPA should look for ways to cost effectively restore beneficial ground water use in the shallow aquifer.*

Response:

EPA agrees that conditions at the site are not suitable for the utilization of monitored natural attenuation (MNA). MNA was evaluated in the FFS and not considered an implementable action. The concentration of arsenic in the US&G Aquifer is predicted to increase over the next 130 years, which makes MNA inappropriate for use at this Site. However, given current conditions, this increase will not result in a significant increase in the concentration in the Jordan River making use of an ACL an appropriate remedy. While there is sufficient arsenic within the Perched Unit to support the current rate of loading for almost 300 more years, removal of all of the contamination in the Perched Unit will not allow restoration of the US&G Aquifer in a reasonable time frame.

*j. Ground water modeling conducted by the EPA and others shows that using current appropriated water rights and typical municipal well pumping rates and schedules, the flow direction in both the shallow aquifer and the deep principal aquifer will change in the near future. Under these conditions and the GW-2 scenario, arsenic contamination from the site will soon begin to migrate to the deep principal aquifer. This will result in spreading of the Midvale contaminant plume. GW-2 will therefore not prevent future migration of contaminants into the uncontaminated portions of either the shallow aquifer or the deep principal*

*aquifer, and therefore does not meet the remedial action objectives. On the other hand, extraction of shallow ground water at the Midvale site would maintain a hydraulic gradient towards the extraction system and prevent future migration of the plume into uncontaminated portions of the aquifers. EPA should require active ground water extraction and treatment to prevent offsite migration of the Midvale plume to the deep principal aquifer.*

Response:

References to the modeling work performed by EPA, presented in Appendix 6A of the Supplemental Remedial Investigation Report, are imprecise and lack proper reference to the assumptions utilized and the results obtained. The ground water modeling conducted by EPA that supports the proposed alternative for ground water considered all current uses of ground water in the vicinity of the Site. Ground water modeling conducted by the State of Utah and the U.S. Geological Survey (Lambert 1995) also considers all current uses of ground water in the Salt Lake Valley and provides for similar flow conditions as used in the GW-2 alternative. Under the conditions utilized for the GW-2 alternative, contaminated ground water will continue to discharge to the Jordan River and will not migrate either into uncontaminated portions of the US&G Aquifer or into the Deep Principal Aquifer.

Migration of contamination to the Deep Principal Aquifer would require a substantial increase in withdrawals from the aquifer. This is highly unlikely since the State engineer has closed the aquifer to additional appropriation.

Extraction of shallow ground water is not necessary to contain the contaminated ground water at the Site. The present hydraulic gradients that naturally exist at the Site are sufficient to fully contain ground water contamination.

*k. EPA has not fully addressed the impacts or potential impacts of the slag contaminant plume on the development of the shallow aquifer in the vicinity of the site or, specifically, how water rights held by the District and others will be impacted. No modeling has been presented to demonstrate that the Midvale contaminant plume will not impact these water rights under the preferred no-action alternative. Modeling should also be conducted to demonstrate whether an active extraction system at the site will reduce or eliminate spreading of the plume to other wells and discharge of contaminant to the Jordan River.*

Response:

The district states that EPA has not conducted modeling to demonstrate that the Midvale contaminant plume will not impact these [the district's] water rights for the proposed alternative. EPA did consider impacts to existing water rights/users in its evaluation of alternatives. See GW FFS pp. 1-29 through 1-31. In the FFS, EPA notes that, in 1999, the district began acquiring agricultural water rights that it intended to convert to municipal uses. It is EPA's understanding that some or all of these applications are still

pending, and that the district's plans for water development near the Site have not yet been approved by State governing bodies.

In response to the district's comments, EPA performed additional calculations to evaluate impacts to the contamination plume from an active extraction system located directly across the Jordan River from the Midvale site. The calculations indicate that pumping from a fully screened well in the Shallow Aquifer at a rate of 700 gpm located on the west bank of the Jordan River in the vicinity of the points of discharge of the Midvale Slag OU2 arsenic plume will pull contamination beneath the river and into the well.

As noted in response 1(d), above, this scenario is only one possibility available to the district to develop water within the Shallow Aquifer. Management decisions made by the district regarding well location and production flow rates will determine if and how the arsenic contamination plume located on the Midvale site will be affected in the future.

*We appreciate the time and effort that have gone into investigating the Midvale site and evaluating alternative remediation strategies. We, like you and the rest of the community, are anxious to see the actual remediation begin. It would be unfortunate, however, if after all this time and effort the remediation plans finally selected did not solve the underlying problems, but merely postponed or even exacerbated them. We urge you to modify your preferred surface remediation alternative to effectively deal with the perched aquifer, and that, rather than taking no real action with respect to ground water contamination as contemplated in GW-2, you adopt one of the other alternative ground water plans that would actually solve the ground water problem and protect these important public water supplies.*

Response:

Comment noted.

## **Comments provided by Joyce and Russ Becker, Ball Feed & Horse Supply, dated July 15, 2002**

*I am sending a copy of a recent article in a local Midvale paper. I would like to call to your attention and those who are in connection with the Midvale Slag Superfund sites, including Sharon steel and Midvale Slag, both in the EPA and the E.E.D.O. departments, that the homeowners and business owners attention to the clean-up matter has not dwindled. However, after so many years of meetings, that have seemed to be heading down dead-end streets with little or no resolution of the problems, has made the attendance at meetings dwindle in numbers.*

*I can assure you that those who live and work around the area, and those who own property and have any interest in the area are very much interested in having this matter resolved and would like to see attention with results in clean-up and development of the area. We should and could be keeping pace with all the other surrounding cities, as growth and development are on a continuous basis.*

*I as both a homeowner and business owner, which borders the site, have attended and been interested in this project for many years. We feel that with no attention and expedient clean-up, it will continue to have a stagnation of property values. With clean-up and development revenues would also be realized for City Hall, along with increased business for the rest of the area. Homeowners, would realize a beautification of the area and many other benefits. I have heard over the years and even recently that devaluation of property does hang over our heads since this project began, and most do not see any change in that status.*

*The location of the property is in the heart of the Salt Lake City valley, and could be developed and become very profitable for everyone. Revenues derived and a contribution to the Salt Lake Valley. If this continues to remain a polluted area it not only harms the health of everyone, but also will continue to downgrade the area. This is not fair to anyone who believed Midvale as a vital part of the Salt Lake City Valley, and still believe could be a hub of the Valley, with various contributions from not only business, but from a lovely place in which to reside.*

*I also believe that if the attention goes forward to correcting the problem, and both residence and business owners feel that it is not a stagnated project, you will have the response and contributions of attendance and desires to contribute feedback to the project.*

*I would appreciate being kept abreast of further developments.*

*Thanking you and others who are contributing to the betterment of the area and further progress with this matter.*

Response:

EPA understands the public concerns regarding this Superfund site. EPA has diligently worked with the stakeholder group, which included representatives for the citizens of Midvale, to achieve the best possible remedy for the Site that would allow for the maximum redevelopment opportunity while protecting human health and the environment. EPA is pleased to submit this proposed plan and forthcoming ROD that has found a remedy solution that meets everyone's objectives for development while maintaining the utmost goal of protecting human health and the environment. Information regarding this Site can be found in EPA's Administrative Record and the State offices. EPA appreciates your comments and concerns and is working towards meeting the goals of all stakeholders and citizens.

## **Comments provided by Thomas H. DeSpain, Deputy Director of Public Services, dated August 9, 2002**

*Murray City Corporation had the privilege of reviewing a letter, dated 7-19-02, from David Ovard, General Manager of Jordan Valley Water Conservancy District. (See enclosed letter). Several statements were made concerning the probable ground water contamination of Murray City Well #7 (referred to as Well #9 in letter).*

*[Note that the following statements made in the JVWCD letter were highlighted by Murray City]:*

*In the seventh bullet under the 5<sup>th</sup> topic on pages 4 and 5:  
ì EPA modeling indicates that Murray City Well No. 9, which is partially screened in the shallow aquifer, is expected to draw the Midvale arsenic plume towards the well. The modeling indicates the arsenic concentration at the Murray City well will increase to 50 ug/L (5 times the maximum contaminant level (ì MCLî ) of 10 ug/L) in 200 years. GW-2 is not protective of the aquifers as drinking water sources and will allow arsenic contamination to be drawn towards the Murray City well, as well as numerous additional wells that will be developed in the shallow aquifer in the near future.î*

*In the eighth bullet under the 5<sup>th</sup> topic on page 5:  
ì EPA has conducted modeling of Murray City Well No. 9 and concluded that arsenic contamination from the site will be drawn towards the well and eventually exceed the MCL. EPA should not proceed with ACLs because points of human exposure exist at the District's wells and Murray City Well No. 9.]*

*Murray City Public Services would like to meet with you on your next visit to Salt Lake City to receive clarification on the comments made in the letter as well as information regarding the study on the Midvale Slag Site and Operation Unit 2 Proposed Plan. To make an appointment, I can be reached at: Murray City Public Services*

*ATTN: Thomas H. DeSpain, Deputy Director of Public Services  
4646 South 500 West  
Murray, Utah 84123  
Phone: (801) 270-2454  
Fax: (801) 270-2450  
E-mail: [tdespain@ci.murray.ut.us](mailto:tdespain@ci.murray.ut.us)*

*Your time and cooperation in this matter is appreciated.*

Response:

EPA met with Murray City officials on September 5, 2002 to discuss the issues cited here. Following is a summary of EPA's response to the concerns raised by Murray City. The follow up letter provided by Thomas H. DeSpain, Deputy Director of Public Services is included after EPA's response.

A large plume of arsenic contamination currently exists within the uppermost portion (10 to 20 feet) of the US&G Aquifer at the Site. This contaminated ground water flows to the northwest and discharges to the Jordan River. An upward gradient exists between the Deep Principal Aquifer and the US&G Aquifer and within the US&G Aquifer that prevents downward migration of contamination. Such conditions prevent the migration of contamination toward Murray City Well #7 (incorrectly referenced by JWCD as Well #9) and its wellhead protection area. Restrictions placed on the development of the Deep Principal Aquifer provide for maintaining conditions that prevent the downward migration of contamination. Contaminated ground water lies within the Sharon Steel Restricted Area (Salt Lake Valley Ground Water Management Plan). The transfer of water rights into this area is prohibited. Institutional controls will be provided to prohibit installation of wells into the US&G Aquifer at the Site. As a result, it is very unlikely that development of the US&G Aquifer will result in ground water flow to the north toward Murray City Well #7.

The modeling work cited by the JWCD is presented in Appendix 6B of the Supplemental Remedial Investigation Report (Sverdrup 1998). References to the modeling work in the JWCD letter are imprecise and lack proper reference to the assumptions utilized in the evaluation. It is important to note that the simulations are not predictions of future conditions. The conditions are assumed based on hypothetical scenarios. The scenarios cited assume that ground water flow conditions develop that are very different than those observed today. It is very unlikely that such conditions will develop if ground water is managed in accordance with the Salt Lake Valley Ground Water Management Plan.

**Comments provided by Thomas H. DeSpain, Deputy Director of Public Services, dated September 6, 2002**

*Murray City Corporation wishes to express its appreciation to you and your delegation for the fine manner in which you presented the OU2 Proposed Plan for the Midvale Slag Site.*

*Your visit of September 5, 2002 answered fully our questions and concerns regarding the letter from Mr. David Ovard, General Manager of the Jordan Valley Water Conservancy District dated July 19 , 2002.*

*We look forward to hearing from you in the future should any additional information come forth from your investigation.*

*Once again thank you for taking time out of your busy schedule to enlighten us on your OU2 plan.*

**Response:**

EPA enjoyed meeting with Murray City. We appreciate your time and we will notify you of any further developments.